Electronic Supplementary Information

Facile synthesis of multinuclear complexes based on a tetra (4-pyridyl)amidinate dirhodium(II) dimer

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Preparation of tetra(*N*,*N*'-diphenyl-isonicotinamidate) dirhodium (1):
Twenty-four equivalents of *N*,*N*'-diphenyl-isonicotinamidine (3.06 g, 11,2 mmol) were melted at 195° C and one equivalent (231,4 mg, 0.457 mmol) of dimethanol dirhodium tetraacetate was added to the stirred liquid. The temperature was maintained at 195° C for 5 minutes, then the liquid was left to solidify and was cooled back to room temperature. After extraction in dichloromethane, the product was purified by flash column chromatography on silica gel (eluant: 3 hexanes: 2 acetone (v/v); flashed with ethyl acetate) **1** was obtained in 15% yield (80.9 mg, 0.0625 mmol).
^{1}H NMR (400 MHz, DMSO at 388K) ppm 8.14 (d, J = 3.7 Hz, 1H), 7.05 (t, J = 7.5, 2H), 6.98 (t, J = 7.2 Hz, 1H), 6.70 (d, J = 5.6 Hz, 2H).
High-res mass spec. for $[C_{72}H_{56}N_{12}Rh_2+H]^+$: calculated m/z: 1295.2934; measured m/z: 1295.2876.

Preparation of tetra(*N*''-(2,2'-bipyridinetricarbony-rhenium(I))-*N*,*N*'-diphenyl-isonicotinamidate)dirhodium(II) (2):
To a THF (5 mL) solution containing four equivalents of $[Re(bpy)(CO)_3(NCCH_3)]PF_6$ (86,6 mg, 0.141 mmol) was added one equivalent of **1** (42.3 mg, .0326 mmol) then the solution was heated at reflux for 1 hour. Complex **2** precipitated out of the solution affording a green solid in 59% yield (69.4 mg, 0.0194 mmol).
^{1}H NMR (400 MHz, DMSO at r.t) ppm 9.07 (d, J = 5.1 Hz, 1H), 9.13 (d, J = 5.1 Hz, 1H), 8.65 (d, J = 8.0 Hz, 1H), 8.59 (d, J = 8.1 Hz, 1H), 8.39 (t, J = 7.7 Hz, 1H), 8.33 (t, J = 7.7 Hz, 1H), 7.97 (d, J = 5.9 Hz, 2H), 7.87 (d, J = 6.6 Hz, 1H), 7.78-7.70 (t, 6.6 Hz, 1H), 6.94 (t, J = 7.1Hz, 2H), 6.81 (t, J = 7.3 Hz, 4H), 6.33 (d, J = 5.8 Hz, 2H), 6.07 (broad, 2H), 5.32 (broad, 2H).
High-res mass for $[C_{124}H_{88}N_{20}O_{12}Rh_2Re_4P_2F_{12}]^{2+}$: calculated m/z: 1646.1252; measured m/z: 1646.1201.